SOUTH FLORIDA WATER MANAGEMENT DISTRICT

HERBERT HOOVER DIKE REHABILITATION PROJECT

Project and Lands Committee

February 10, 2016

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HHD Problems (Failure Modes)

Internal erosion (seepage and piping)

- **Through embankment**
- **Through foundation**

Culvert structures

- **Soil erosion into conduit**
- **Erosion/Piping around conduit**

Overwash/Overtopping

- **Erosion of downstream slope**

Dam Safety Action Classification (DSAC) Level 1- Assigned 2006

Implementation Timeline

Dam Safety Modification Study

- Draft EIS public review 24 December 2015 to 23 February 2016
- DSMS report approval by summer 2016
- Construction start in FY2019 with expected duration of 5 to 7 years (prioritization and funding dependent)

Reach 1 Cutoff Wall Gap Closure

- Construction 2016 – 2018

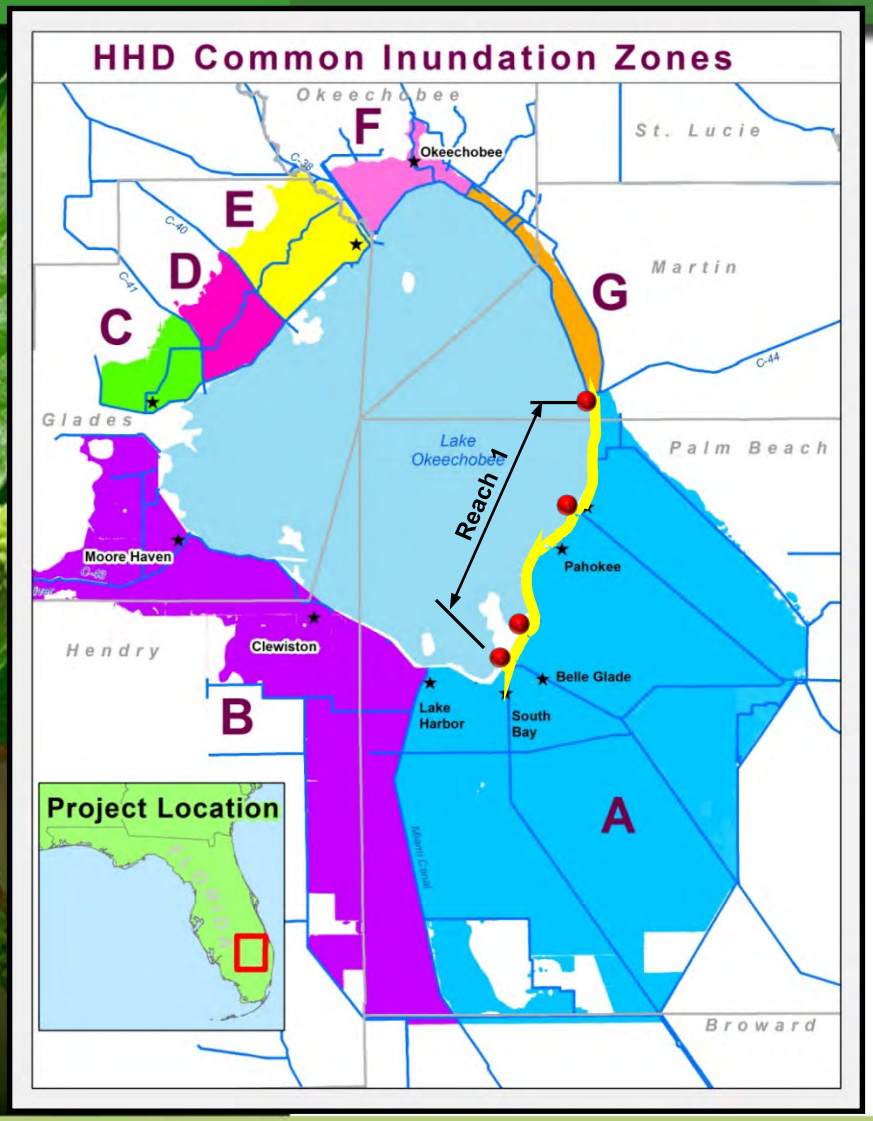
Reach 1 Cutoff Wall Extension

- Construction 2017 – 2020

Water Control Structures

- Southern Culverts Complete 2020
- Northern Culverts Complete 2022

HHD Reach 1 Cutoff Wall



Approval from 2000 HHD Major Rehabilitation Report

Completed – 21.4 miles of cutoff wall installed between 2007 and 2013

Planned – Cutoff wall tie-ins to 3 existing structures and 1 bridge with contract award in FY16

Gap Closure Complete 2018

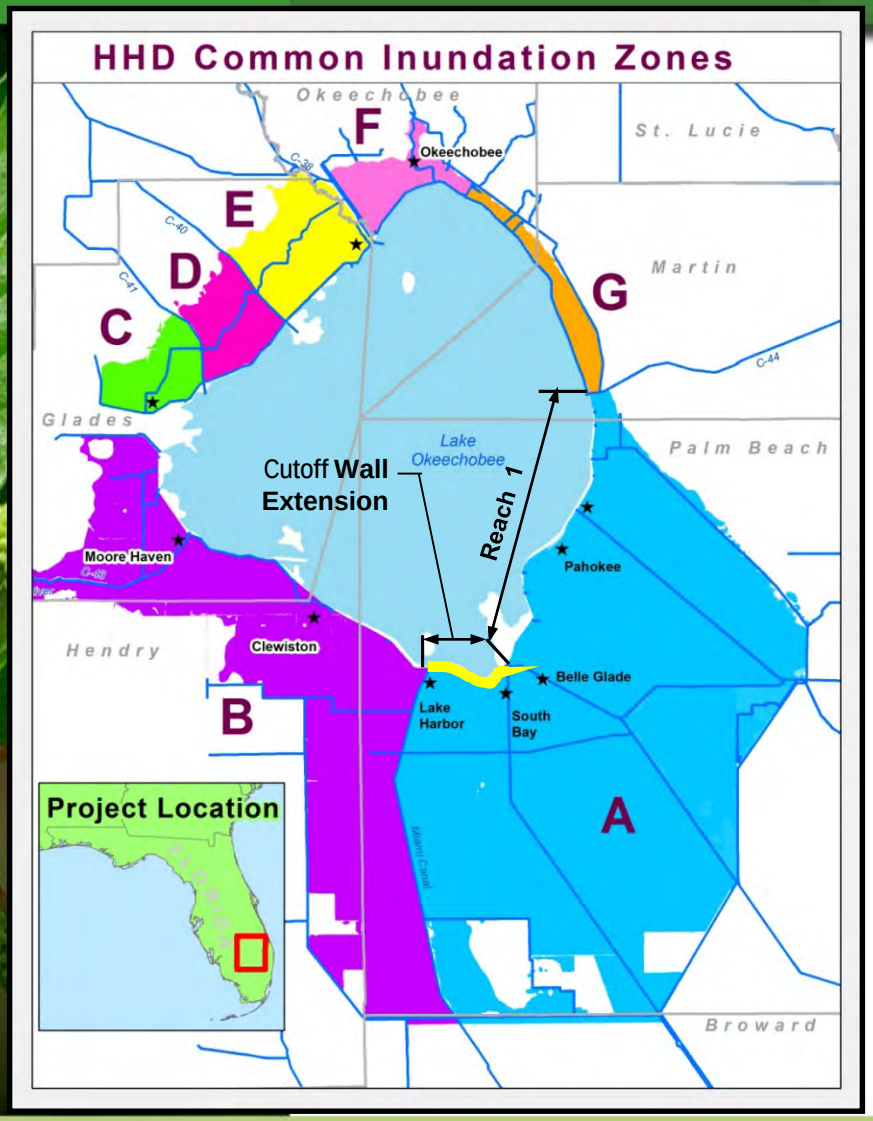
Risk Rating – DSAC 1 (Critically near failure; Extreme high risk)

Reach 1 Cutoff Wall Status

Cutoff Wall Installation Complete

Cutoff Wall Gap Closures Planned

HHD Reach 1 Cutoff Extension



Approval from 2015 HHD Major Rehabilitation Report Supplement

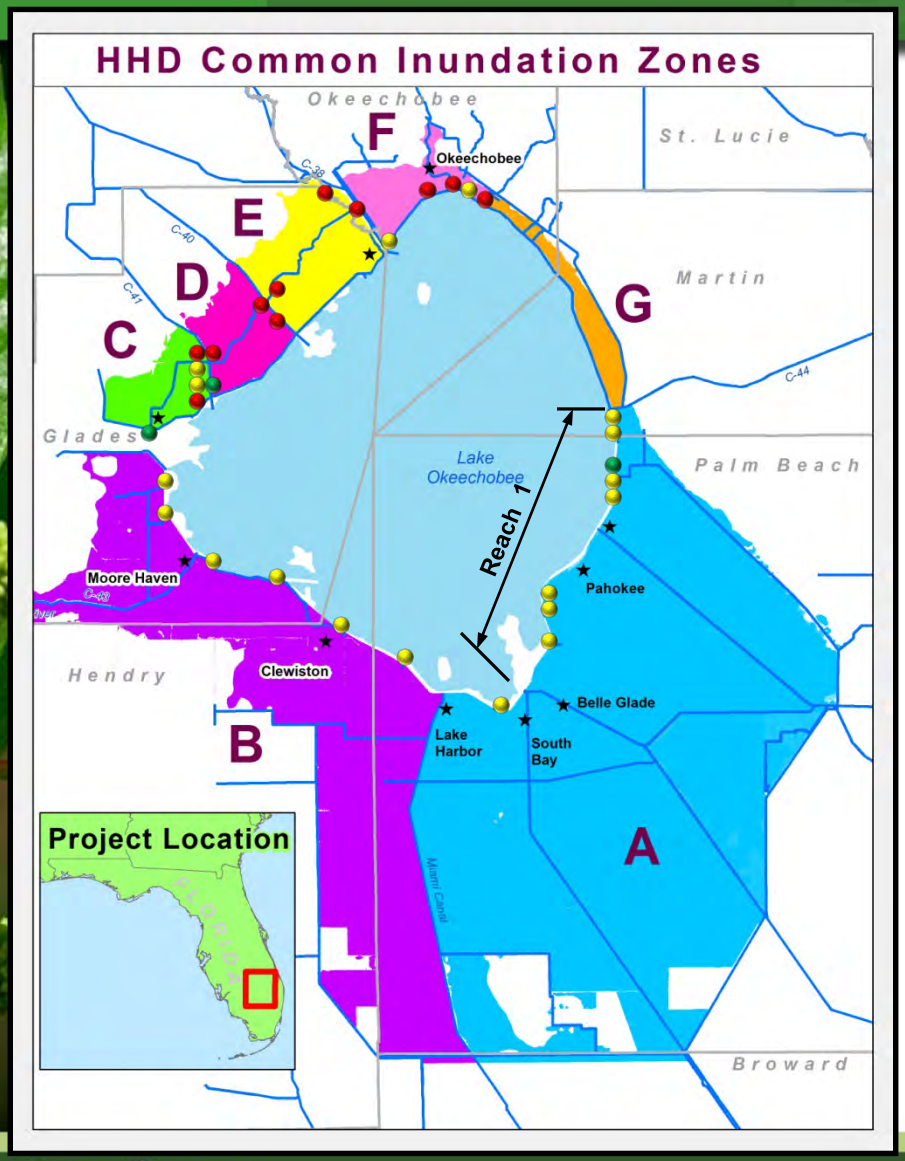
Planned – 6.6 miles of cutoff wall installed with contract award in FY17 and completion in **2020**

Impact – Final embankment remediation project to complete repairs reducing risks to inundation Zone A

Complete the continuous seepage barrier through Inundation Zone A providing the risk reduction benefits to the adjacent communities and allow a recommendation for accreditation to FEMA for this area of HHD

Risk Rating – DSAC 1 (Critically near failure; Extreme high risk)

HHD Culvert Replacement Program



Approval from 2011 HHD Culvert Letter Report

Completed – 1 removal and 2 replacements

Ongoing – 10 contracts with 18 replacements completed by **2020**

Planned – 5 contracts with 8 replacements; 3 contracts with 3 abandonments to be scheduled and completed by **2022**

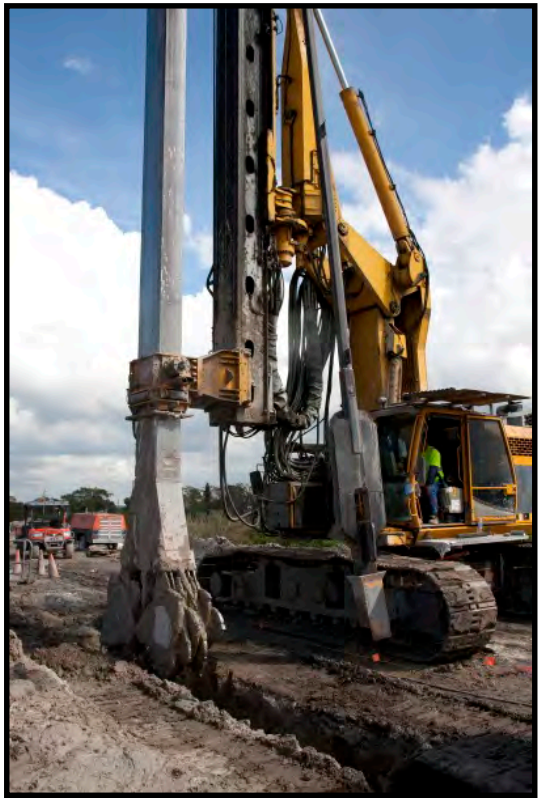
Risk Rating – DSAC 1 (Critically near failure; Extreme high risk)

Water Control Structure (Culvert) Status

- Construction Contract Complete
- Construction Contract Ongoing
- Construction Contract Planned

Cutoff Wall Construction Pictures

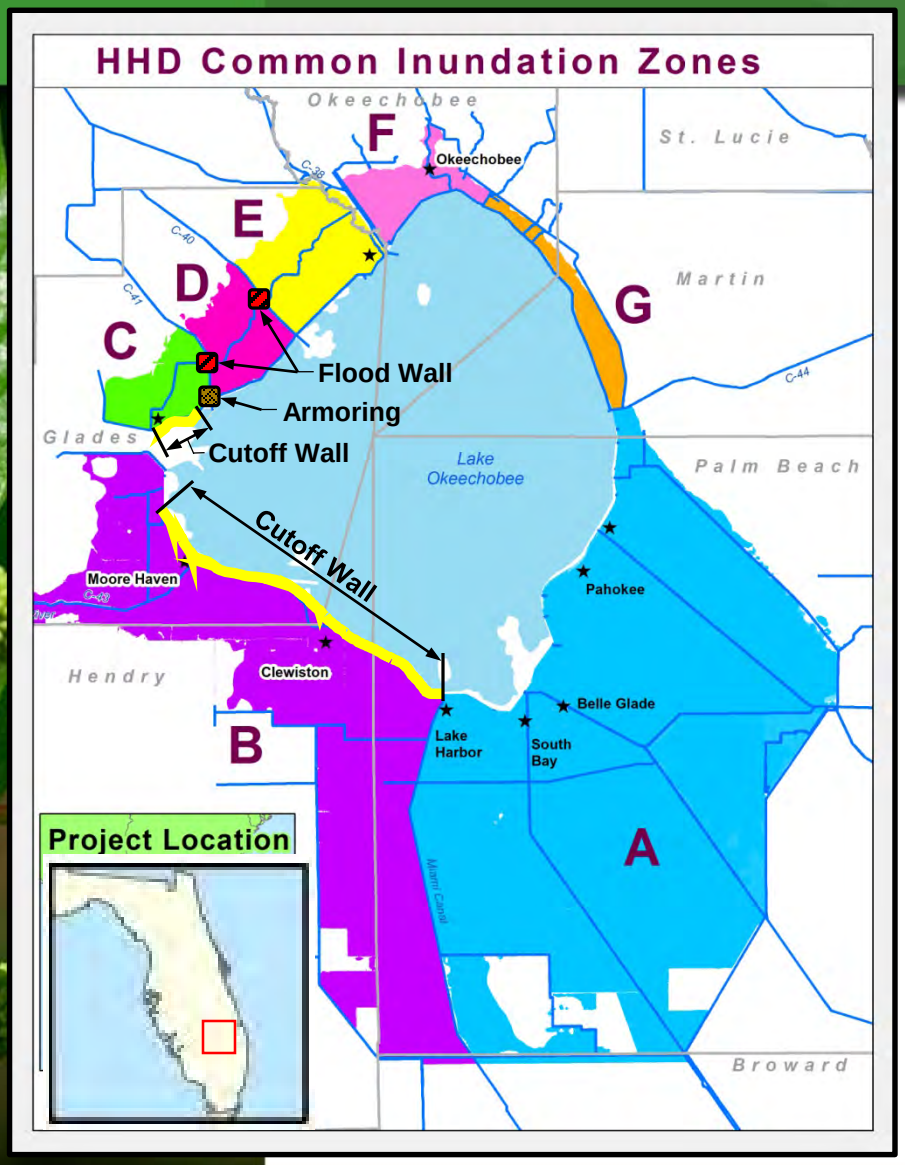
Hydromill



Cutter Soil Mixer (CSM)

Trench Remix Deep (TRD)

DSMS Tentatively Selected Plan (TSP)



Approval by USACE Dam Safety Officer Required

Common Inundation Zone B

- 24.5 miles of cutoff wall

Common Inundation Zone C

- 4.1 miles of cutoff wall
- HP bridge abutment armoring

Common Inundation Zone D

- S-71 embankment flood wall
- S-72 embankment flood wall

Risk Rating – DSAC 2 (Failure initiation forseen; very high risk)

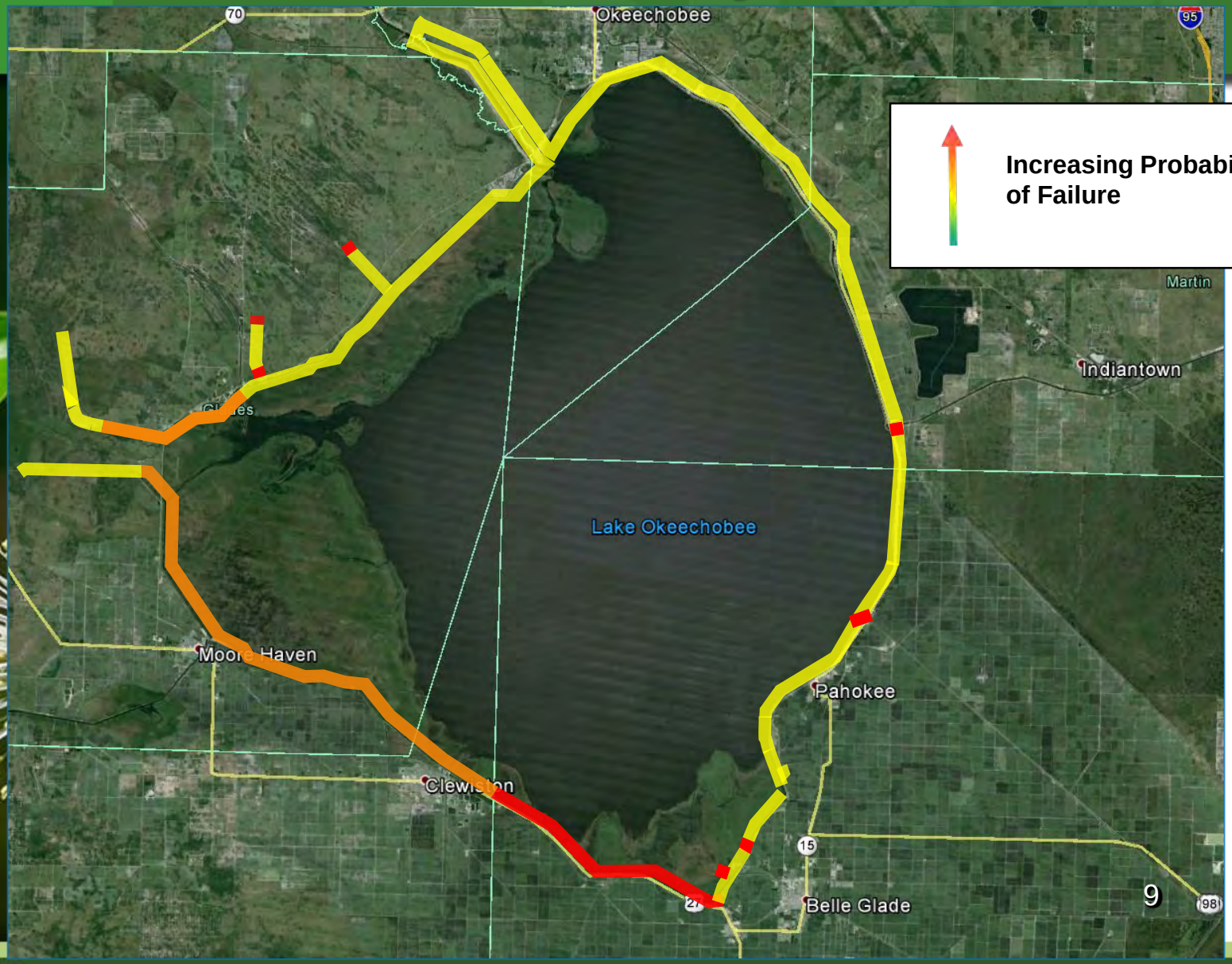
Draft DSMR Tentatively Selected Plan

Cutoff Wall Locations

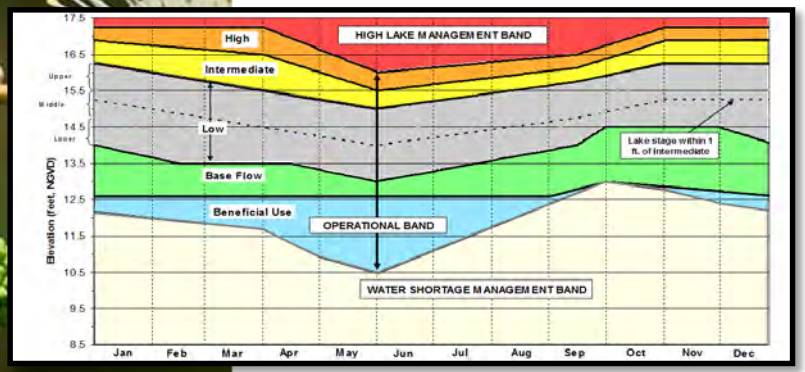
Embankment Armoring Locations

Embankment Flood Wall Locations

Relative Probability of Failure

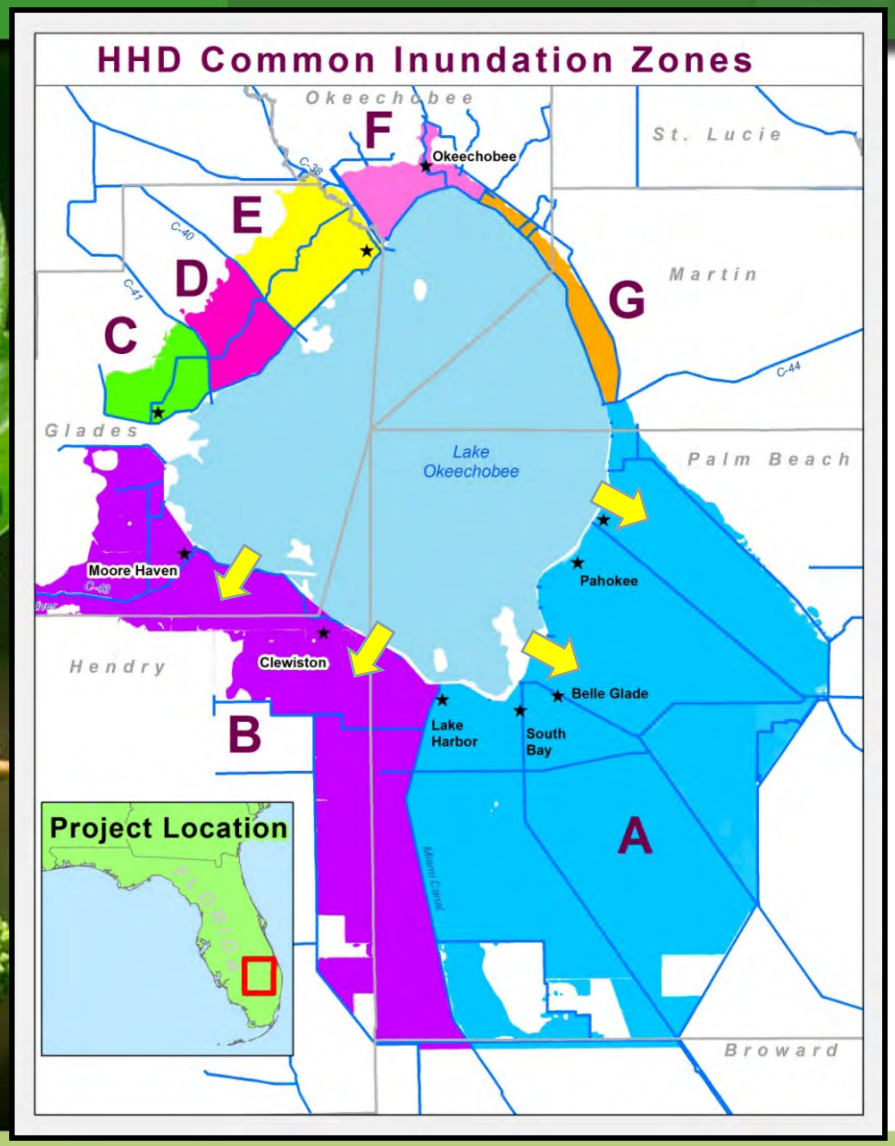


Lake Regulation Schedule



- Dam Safety Modification Study Risk Assessment utilized the current Lake Okeechobee Regulation Schedule (LORS)
- Proposed revisions to the current LORS will require an updated risk evaluation and a future lake regulation study for informed decision making
- A study for a new regulation schedule could be undertaken concurrently while risk reduction features identified in the DSMR are constructed
- A revised regulation schedule is not expected before 2020 and the timeline for implementation of any new regulation schedule will depend on the magnitude of change from the current LORS

Groundwater Considerations



- Groundwater monitoring indicates Zone A wall may have impacted shallow surficial aquifer interface with high salinity zone.
- Modeling indicates that Zone B wall will have negligible impact to interface with high salinity zone.
- Recommend Corps expand GW monitoring to determine extent of impact

District Response to Draft EIS

- Corps needs to complete all work to reduce public safety, environmental and economic risks categorized by HHD as DSAC 1 and DSAC 2.
- Work needs to be completed expeditiously.
- Completion of work will allow District and Corps to consider revisions to the Regulation Schedule and reduce downstream adverse environmental impacts from high rain events.

QUESTIONS?